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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/620,060	GUIDASH, ROBERT M.	
	Examiner	Art Unit	
	CHRISS S. YODER III	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 May 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed May 6, 2008 have been fully considered but they are not persuasive.

Applicant argues, with respect to claims 22 and 37, that Fossum does not disclose a plurality of charge-to-voltage conversion regions, wherein at least two adjacent light receiving elements share a charge-to-voltage conversion region.

However, the Examiner notes that column 11, lines 14-40 discloses the use of multiresolution circuitry, and that this multiresolution circuitry has been interpreted to include the charge-to-voltage conversion regions. Further description of the multiresolution circuitry can be seen in column 12, line 14 – column 13, line 37 and figures 7-9, where it is used to average pixels by sharing charge-to-voltage conversion regions. The charge from each pixel is sent to a charge-to-voltage conversion region within the multiresolution circuitry (the combination of 702 and 704 is considered to be the charge-to-voltage conversion regions), and depending on the resolution to be output, the charge-to-voltage conversion regions can be switchably shared to average adjacent pixels.

Applicant's arguments with respect to claims 5-21 and 26-36 have been considered but are moot in view of the new ground(s) of rejection. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

Claim Objections

Claim13 is objected to because of the following informalities:

Claim 13 recites the limitation, "the color filter is a Bayer patter in which signals from a single color type are *type is* sent", in lines 2-3. The Examiner believes this should be changed to read, "the color filter is a Bayer patter in which signals from a single color type are sent". For purposes of examination, the claims will be examined as understood by the Examiner.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. **Claims 22-25 and 37-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Fossum et al. (US Patent # 5,949,483).**

2. In regard to **claim 22**, note Fossum discloses an image sensor comprising a plurality of light receiving elements each having a photodetector and a transfer mechanism (column 5, line 55 – column 6, line 21 and figure 3a), and a plurality of charge to voltage conversion regions (column 11, lines 14-40), wherein at least two adjacent light receiving elements share a charge to voltage conversion region (column

11, lines 14-40), wherein charge of adjacent light receiving elements is combined in the shared charge to voltage conversion region (column 11, lines 14-40).

3. In regard to **claim 23**, note Fossum discloses that the timing selectively combines charge from light receiving elements with a similar color filter array element (column 7, lines 43-67 and column 10, lines 12-50; since all of the adjacent pixels are combined, this includes similar color elements).

4. In regard to **claim 24**, note Fossum discloses that the charge of adjacent light receiving elements is substantially simultaneously transferred to the shared charge to voltage conversion region (column 9, lines 48-57).

5. In regard to **claim 25**, note Fossum discloses that the charge of all adjacent light receiving elements associated with a common charge to voltage conversion regions is transferred to the shared charge to voltage conversion region to form a single voltage signal associated with all of the adjacent light receiving elements (column 10, lines 20-53, column 11, lines 23-40, and figure 8).

6. In regard to **claim 37**, note Fossum discloses a camera comprising an image sensor comprising a plurality of light receiving elements each having a photodetector and a transfer mechanism (column 5, line 55 – column 6, line 21 and figure 3a), and a plurality of charge to voltage conversion regions (column 11, lines 14-40), wherein at least two adjacent light receiving elements share a charge to voltage conversion region (column 11, lines 14-40), wherein charge of adjacent light receiving elements is combined in the shared charge to voltage conversion region (column 11, lines 14-40).

7. In regard to **claim 38**, note Fossum discloses that the timing selectively combines charge from light receiving elements with a similar color filter array element (column 7, lines 43-67 and column 10, lines 12-50; since all of the adjacent pixels are combined, this includes similar color elements).

8. In regard to **claim 39**, note Fossum discloses that the charge of adjacent light receiving elements is substantially simultaneously transferred to the shared charge to voltage conversion region (column 9, lines 48-57).

9. In regard to **claim 40**, note Fossum discloses that the charge of all adjacent light receiving elements associated with a common charge to voltage conversion regions is transferred to the shared charge to voltage conversion region to form a single voltage signal associated with all of the adjacent light receiving elements (column 10, lines 20-53, column 11, lines 23-40, and figure 8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. **Claims 5, 6, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nam (US Patent 7,408,443) in view of Tu et al. (US Pub. 2004/0041931).**

11. In regard to **claim 5**, note Nam discloses an image sensor comprising a plurality of light receiving elements a portion of which have a color filter mated with the light receiving elements, and the light receiving elements are arranged in an array (column 4, lines 60-65 and figure 6), a plurality of floating diffusions respectively mated with the plurality of light receiving elements (column 6, lines 30-32, and figure 9A: 920), two column circuits connected to each column of light receiving elements and used to store the signal from the light receiving elements one row at a time (column 5, lines 5-13 and figure 6: 611-612), and a select switch used to control which column circuit a particular signal from a light receiving element is stored (column 5, lines 14-58). Therefore, it can be seen that Nam fails to disclose that a color difference readout signal is output when a reset signal for at least one column circuit is obtained by sampling the signal of one color and the light signal level for that column circuit is obtained by sampling the signal of a different color.

In analogous art, Tu discloses the use of a difference readout signal that is output when a reset signal for at least one column circuit is obtained by sampling the signal of one pixel, and the light signal level for that column circuit is obtained by sampling the signal of a different pixel (paragraphs 0049-0051, the reset from one pixel Vrst1 and the image signal from another pixel Vsig2 are used to output a difference signal). And by combining Tu with Nam, based on the color pattern used by Nam, pixels located adjacent to each other are different colors, and therefore, a reset signal of a pixel having one color and an image signal of an adjacent pixel having another color are sampled to output the difference readout signal. Tu teaches that the use of a reset

signal from one pixel and an image signal from another pixel, to output a difference readout signal is preferred in order to reduce column to column noise, signal loss, and die area (paragraph 0051). Therefore, it would have been obvious to one of ordinary skill in the art to modify Nam to include the use of a difference readout signal that is output when a reset signal for at least one column circuit is obtained by sampling the signal of one pixel, and the light signal level for that column circuit is obtained by sampling the signal of a different pixel in order to reduce column to column noise, signal loss, and die area, as suggested by Tu.

12. In regard to **claim 6**, note Nam discloses that substantially all of the signals from the light receiving elements that are in the same column with the same colors are transferred to the same column circuit (column 5, lines 14-58 and figure 6; all of the green pixels are transferred to upper ADC 611, and all of the red and blue pixels are transferred to lower ADC 612).

13. In regard to **claim 8**, note Nam discloses a camera comprising an image sensor comprising a plurality of light receiving elements a portion of which have a color filter mated with the light receiving elements, and the light receiving elements are arranged in an array (column 4, lines 60-65 and figure 6), a plurality of floating diffusions respectively mated with the plurality of light receiving elements (column 6, lines 30-32, and figure 9A: 920), two column circuits connected to each column of light receiving elements and used to store the signal from the light receiving elements one row at a time (column 5, lines 5-13 and figure 6: 611-612), and a select switch used to control which column circuit a particular signal from a light receiving element is stored (column

5, lines 14-58). Therefore, it can be seen that Nam fails to disclose that a color difference readout signal is output when a reset signal for at least one column circuit is obtained by sampling the signal of one color and the light signal level for that column circuit is obtained by sampling the signal of a different color.

In analogous art, Tu discloses the use of a difference readout signal that is output when a reset signal for at least one column circuit is obtained by sampling the signal of one pixel, and the light signal level for that column circuit is obtained by sampling the signal of a different pixel (paragraphs 0049-0051, the reset from one pixel Vrst1 and the image signal from another pixel Vsig2 are used to output a difference signal). And by combining Tu with Nam, based on the color pattern used by Nam, pixels located adjacent to each other are different colors, and therefore, a reset signal of a pixel having one color and an image signal of an adjacent pixel having another color are sampled to output the difference readout signal. Tu teaches that the use of a reset signal from one pixel and an image signal from another pixel, to output a difference readout signal is preferred in order to reduce column to column noise, signal loss, and die area (paragraph 0051). Therefore, it would have been obvious to one of ordinary skill in the art to modify Nam to include the use of a difference readout signal that is output when a reset signal for at least one column circuit is obtained by sampling the signal of one pixel, and the light signal level for that column circuit is obtained by sampling the signal of a different pixel in order to reduce column to column noise, signal loss, and die area, as suggested by Tu.

14. In regard to **claim 9**, note Nam discloses that substantially all of the signals from light receiving elements in the column with the same colors are transferred to the same column circuit (column 5, lines 14-58 and figure 6; all of the green pixels are transferred to upper ADC 611, and all of the red and blue pixels are transferred to lower ADC 612).

15. **Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nam (US Patent 7,408,443) in view of Tu et al. (US Pub. 2004/0041931), and further in view of Fossum et al. (US Patent 5,949,483).**

16. In regard to **claim 7**, note the primary reference of Nam in view of Tu discloses the use of an image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 6 above. Therefore, it can be seen that the primary reference fails to disclose that adjacent samples in each column circuit are averaged. In analogous art, Fossum discloses averaging adjacent samples in each column circuit (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that the averaging of adjacent samples in each column circuit is preferred in order to improve processing time by reducing the amount of data that is output (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the averaging of adjacent samples in each column circuit in order to improve processing time by reducing the amount of data that is output, as suggested by Fossum.

17. In regard to **claim 10**, note primary reference of Nam in view of Tu discloses the use of an image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 9 above. Therefore, it can be seen that the primary reference fails to disclose that adjacent samples in each column circuit are averaged. In analogous art, Fossum discloses averaging adjacent samples in each column circuit (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that the averaging of adjacent samples in each column circuit is preferred in order to improve processing time by reducing the amount of data that is output (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the averaging of adjacent samples in each column circuit in order to improve processing time by reducing the amount of data that is output, as suggested by Fossum.

18. **<u>Claims 11-18, 20, 26-33, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al. (US Patent 4,453,177) in view of Guidash (US Patent 6,710,804).</u>**

19. In regard to **claim 11**, note Berger discloses an x-y addressable image sensor comprising a plurality of light receiving elements arranged in an array of rows and columns that convert the light to a signal (column 6, lines 50-67 and figure 4a), at least two signal storage banks comprised of individual signal storage elements (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), the at least two storage banks having

enough individual storage elements to store the signals from at least one row of light receiving elements in the array (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), and at least two select mechanisms which can direct signals from the plurality of light measuring elements to any single or combination of the signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49). Therefore, it can be seen that Berger fails to disclose that each of the at least two storage banks has enough individual storage elements to store the signals from at least one row of light receiving elements in the array, and that multiple samples of each signal from at least one row of light receiving elements are concurrently stored in different individual signal storage elements.

In analogous art, Guidash discloses the use of a storage bank that concurrently stores multiple samples of each signal from at least one row of light receiving elements in different individual signal storage elements within a single storage bank (column 4, lines 14-61 and figure 1b). Guidash teaches that concurrently storing multiple samples of each signal from at least one row of light receiving elements in different individual signal storage elements within a single storage bank is preferred in order to cancel pixel offset noise and extend the dynamic range of the pixel (column 5, lines 9-14). And by replacing each storage bank of Berger with the storage bank of Guidash, each of the storage banks would have enough individual storage elements to store the signals from at least one row of light receiving elements. Therefore, it would have been obvious to one of ordinary skill in the art to modify Berger such that each of the at least two storage banks has enough individual storage elements to store the signals from at least one row of light receiving elements in the array, and that multiple samples of each signal from at

least one row of light receiving elements are concurrently stored in different individual signal storage elements, in order to cancel pixel offset noise and extend the dynamic range of the pixel, as suggested by Guidash.

20. In regard to **claim 12**, note Berger discloses that a plurality of color filters mated with the plurality of light receiving elements, and the select mechanism is used to send signals from the light receiving elements mated to a single color filter type to a desired signal storage bank such that, for any given row, a single signal storage bank contains signals from a single color type (column 7, lines 5-18; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

21. In regard to **claim 13**, note Berger discloses that the color filter is a Bayer pattern in which signals from a single color type are sent to only one of the two signal storage banks (column 7, lines 5-18 and figure 4a; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

22. In regard to **claim 14**, note Berger discloses that the single color type sent to only one of the storage regions is green (column 7, lines 5-18; all of the green pixels are transferred to output 27).

23. In regard to **claim 15**, note Berger discloses that the individual signal storage elements in the signal storage banks are larger than light measuring element pitch (figure 4a; the storage elements 29 are wider than the pixel pitch).

24. In regard to **claim 16**, note Berger discloses that the at least two select mechanisms direct signals from the each of the plurality of light receiving elements to both signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49).

25. In regard to **claim 17**, note Berger discloses that a plurality of signal storage banks and the at least two select mechanisms direct signals to multiple signal storage banks (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49).

26. In regard to **claim 18**, note Guidash discloses that a single pixel can be directed to multiple single storage elements within a signal storage bank (column 4, lines 14-61 and figure 1b), and Berger discloses that the pixel signal can be directed to any signal storage bank (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49). Therefore, a single pixel can be directed to multiple single storage elements within any signal storage bank.

27. In regard to **claim 20**, note Guidash discloses that a single pixel can be directed to adjacent individual signal storage elements within a signal storage bank (column 4, lines 14-61 and figure 1b), and Berger discloses that the pixel signal can be directed to any signal storage bank (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49). Therefore, a single pixel can be directed to adjacent individual signal storage elements within any signal storage bank.

28. In regard to **claim 26**, note Berger discloses a camera comprising an x-y addressable image sensor comprising a plurality of light receiving elements arranged in an array of rows and columns that convert the light to a signal (column 6, lines 50-67 and figure 4a), at least two signal storage banks comprised of individual signal storage elements (column 7, lines 5-18 and figure 4a: 27,29,37, and 39), the at least two storage banks having enough individual storage elements to store the signals from at least one row of light receiving elements in the array (column 7, lines 5-18 and figure

4a: 27,29,37, and 39), and at least two select mechanisms which can direct signals from the plurality of light receiving elements to any single or combination of the signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49). Therefore, it can be seen that Berger fails to disclose that each of the at least two storage banks has enough individual storage elements to store the signals from at least one row of light receiving elements in the array, and that multiple samples of each signal from at least one row of light receiving elements are concurrently stored in different individual signal storage elements.

In analogous art, Guidash discloses the use of a storage bank that concurrently stores multiple samples of each signal from at least one row of light receiving elements in different individual signal storage elements within a single storage bank (column 4, lines 14-61 and figure 1b). Guidash teaches that concurrently storing multiple samples of each signal from at least one row of light receiving elements in different individual signal storage elements within a single storage bank is preferred in order to cancel pixel offset noise and extend the dynamic range of the pixel (column 5, lines 9-14). And by replacing each storage bank of Berger with the storage bank of Guidash, each of the storage banks would have enough individual storage elements to store the signals from at least one row of light receiving elements. Therefore, it would have been obvious to one of ordinary skill in the art to modify Berger such that each of the at least two storage banks has enough individual storage elements to store the signals from at least one row of light receiving elements in the array, and that multiple samples of each signal from at least one row of light receiving elements are concurrently stored in different individual

signal storage elements, in order to cancel pixel offset noise and extend the dynamic range of the pixel, as suggested by Guidash.

29. In regard to **claim 27**, note Berger discloses a plurality of color filters mated with the plurality of light receiving elements, and the select mechanism is used to send signals from the light receiving elements mated to a single color filter type to a desired signal storage bank such that, for any given row, a single signal storage bank contains signals from a single color type (column 7, lines 5-18; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

30. In regard to **claim 28**, note Berger discloses that the color filter is a Bayer pattern in which a color of a single type is sent to only one of the two signal storage banks (column 7, lines 5-18 and figure 4a; all of the green pixels are transferred to output 27, and all of the red and blue pixels are transferred to output 29).

31. In regard to **claim 29**, note Berger discloses that the single color type sent to only one of the storage regions is green (column 7, lines 5-18; all of the green pixels are transferred to output 27).

32. In regard to **claim 30**, note Berger discloses that the individual signal storage elements in the signal storage banks are larger than light measuring element pitch (figure 4a; the storage elements 29 are wider than the pixel pitch).

33. In regard to **claim 31**, note Berger discloses that the at least two select mechanisms direct signals from the each of the plurality of light receiving elements to both signal storage banks (column 7, lines 5-18 and figure 4a: 41-44, 47 and 49).

34. In regard to **claim 32**, note Berger discloses a plurality of signal storage banks and the at least two select mechanisms direct signals to multiple signal storage banks (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49).

35. In regard to **claim 33**, note Guidash discloses that a single pixel can be directed to multiple single storage elements within a signal storage bank (column 4, lines 14-61 and figure 1b), and Berger discloses that the pixel signal can be directed to any signal storage bank (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49). Therefore, a single pixel can be directed to multiple single storage elements within any signal storage bank.

36. In regard to **claim 35**, note Guidash discloses that a single pixel can be directed to adjacent individual signal storage elements within a signal storage bank (column 4, lines 14-61 and figure 1b), and Berger discloses that the pixel signal can be directed to any signal storage bank (column 7, lines 5-18 and figure 4a: 27,29,37,39,41-44, 47 and 49). Therefore, a single pixel can be directed to adjacent individual signal storage elements within any signal storage bank.

37. **Claims 19, 21, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al. (US Patent 4,453,177) in view of Guidash (US Patent 6,710,804), and further in view of Fossum et al. (US Patent 5,949,483).**

38. In regard to **claim 19**, note the primary reference of Berger in view of Guidash discloses the use of an x-y addressable image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two

column circuits, as claimed in claim 18 above. Therefore, it can be seen that the primary reference fails to disclose that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value.

In analogous art, Fossum discloses that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that averaging adjacent signals from light receiving elements to produce a single value is preferred in order to reduce the amount of data that is output and improve processing time (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary reference to average adjacent signals from light receiving elements to produce a single value in order to reduce the amount of data that is output and improve processing time, as suggested by Fossum.

39. In regard to **claim 21**, note the primary reference of Berger in view of Guidash discloses the use of an x-y addressable image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 20 above. Therefore, it can be seen that the primary reference fails to disclose that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value.

In analogous art, Fossum discloses that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that averaging adjacent signals from light receiving elements to produce a single value

is preferred in order to reduce the amount of data that is output and improve processing time (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary reference to average adjacent signals from light receiving elements to produce a single value in order to reduce the amount of data that is output and improve processing time, as suggested by Fossum.

40. In regard to **claim 34**, note the primary reference of Berger in view of Guidash discloses the use of an x-y addressable image sensor comprising a plurality of light measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 33 above. Therefore, it can be seen that the primary reference fails to disclose that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value.

In analogous art, Fossum discloses that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that averaging adjacent signals from light receiving elements to produce a single value is preferred in order to reduce the amount of data that is output and improve processing time (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary reference to average adjacent signals from light receiving elements to produce a single value in order to reduce the amount of data that is output and improve processing time, as suggested by Fossum.

41. In regard to **claim 36**, note the primary reference of Berger in view of Guidash discloses the use of an x-y addressable image sensor comprising a plurality of light

measuring elements outputting image signals that are selectively stored in one of two column circuits, as claimed in claim 35 above. Therefore, it can be seen that the primary reference fails to disclose that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value.

In analogous art, Fossum discloses that adjacent signals from the light receiving elements in the adjacent signal storage elements are averaged to produce a single value (column 10, lines 20-53, column 11, lines 23-40, and figure 8). Fossum teaches that averaging adjacent signals from light receiving elements to produce a single value is preferred in order to reduce the amount of data that is output and improve processing time (column 10, lines 20-53). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary reference to average adjacent signals from light receiving elements to produce a single value in order to reduce the amount of data that is output and improve processing time, as suggested by Fossum.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US006822213B2: note the use of a shared floating diffusion region.

US 20060208163A1: note the use of a shared floating diffusion region.

US 20070075221A1: note the use of a shared floating diffusion region.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISS S. YODER III whose telephone number is (571)272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. S. Y./
Examiner, Art Unit 2622

/Lin Ye/
Supervisory Patent Examiner, Art Unit 2622